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(54) Abstract Title
Decking clip

(57) A decking clip, and method of use, for securing decking planks (60) to a joist (54), comprises a plate (68) adapted to be secured overlying the joist; first and second rigidly upstanding legs (62, 64) having spikes or tangs (56, 66) on their upper ends extending generally parallel to the plate and pointing in opposite directions; wherein the legs are spaced apart across the plate to enable one of the spikes to be driven into the edge of a plank (58) by one or more hammer blows without the hammer engaging the other leg or spike. The plate may have at least one aperture through which a fixing device (52), e.g. nail or screw, can be driven into the joist below. The clip is preferably either formed from a metal blank by bending appropriate regions to form the legs and spikes, or by casting or cold forming. A tool to assist in driving a spike of the decking clip into the edge of the plank and a spacer plate are also disclosed.

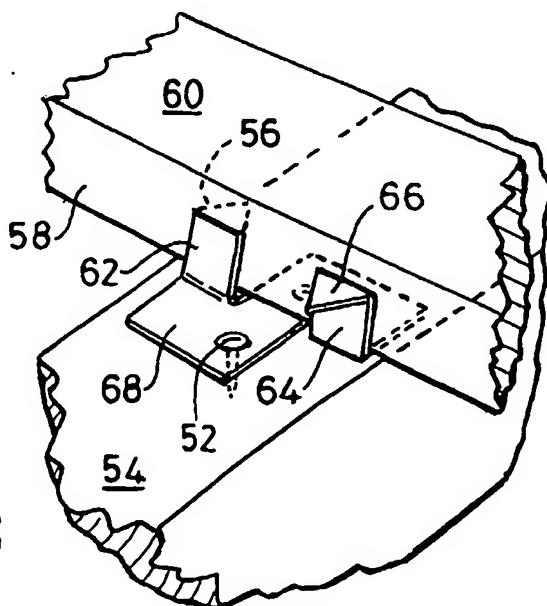


Fig. 3

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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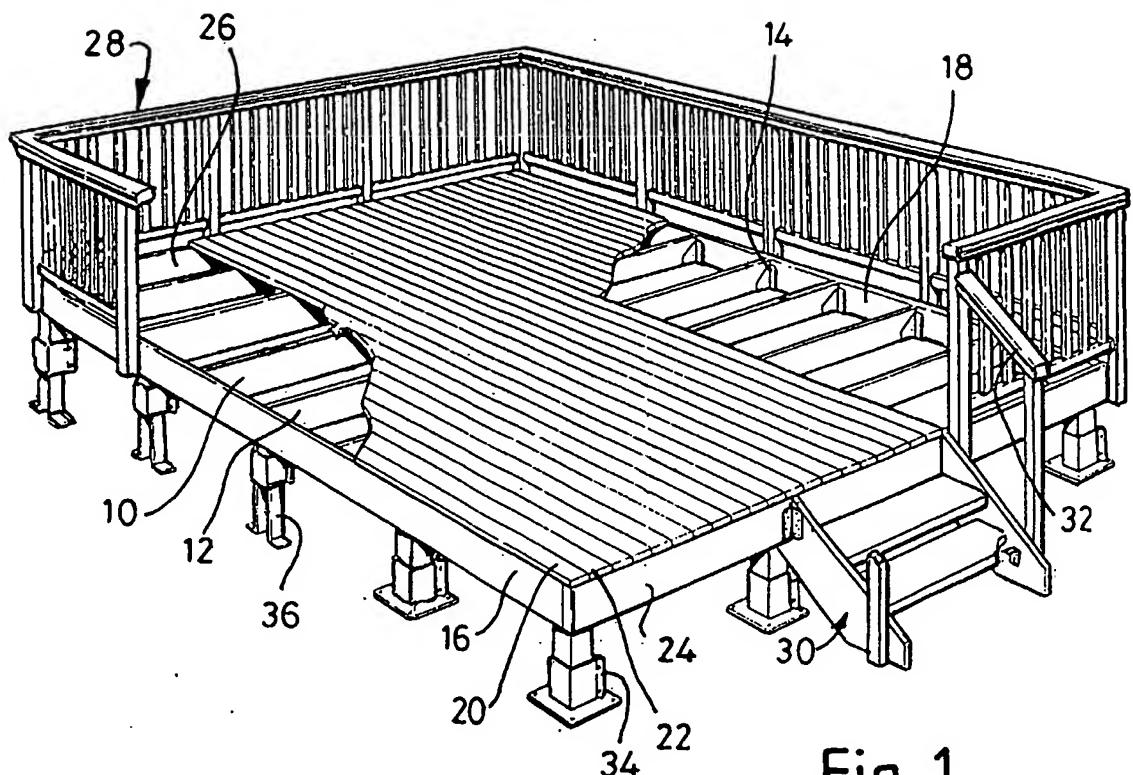


Fig. 1

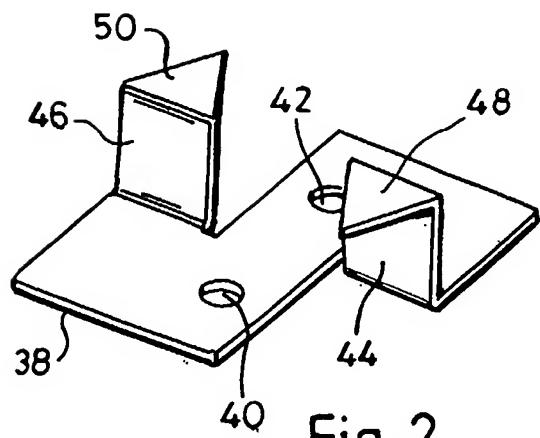


Fig. 2

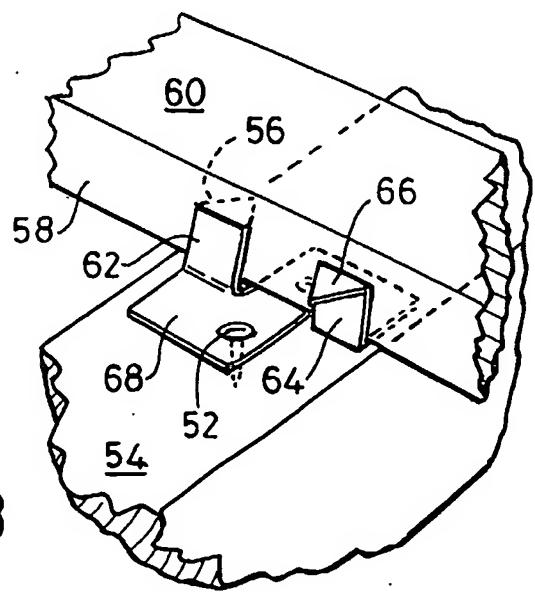
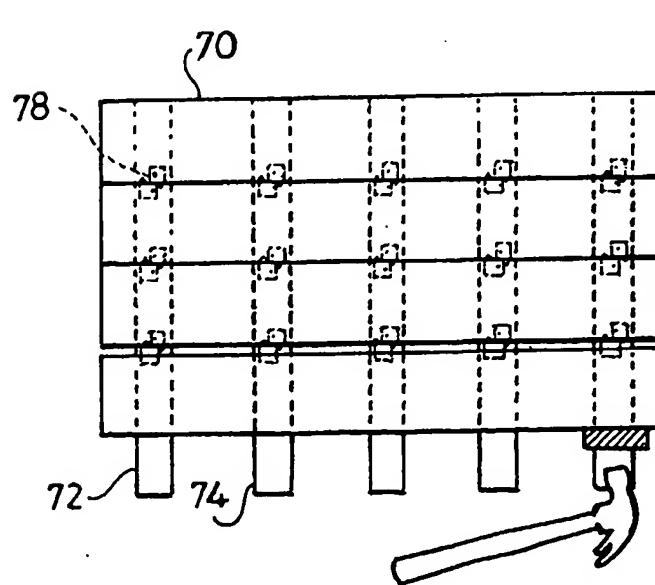
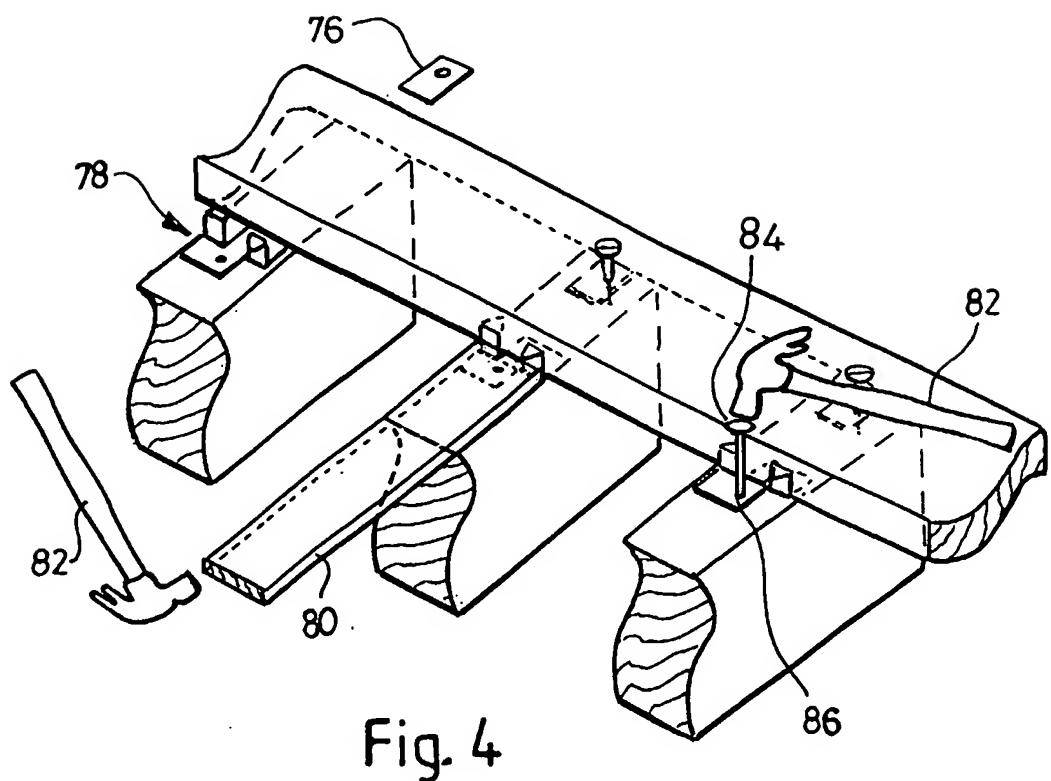


Fig. 3

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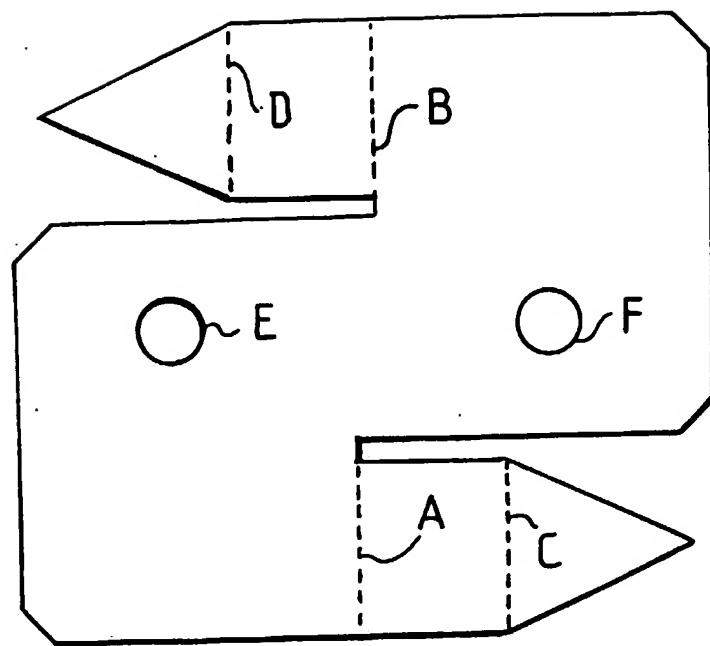


Fig. 6

Title: Improved decking clip

Field of invention

This invention concerns devices for securing planks of wood to supporting timbers (joists). Such devices are sometimes referred to as decking fastenings or decking clips.

Background

Conventionally decking planking is laid transversely to an array of parallel spaced apart timber joists and have often been secured simply by driving nails through the decking planks into the joists below. The use of nails for this purpose has several disadvantages as are enumerated in the first two pages of the published PCT Application WO 95/25856, which also describes alternative fastening devices both from the prior art (such as re described in US Patents 4965980, 4925141, 5027573 and 484451) and an improved clip illustrated in Figs 1 to 3 of WO 95/25856.

This latter clip includes a plate section 11 by which it can be nailed to the side face of a timber joist so that perpendicularly extending flanges 13 overlie the upper edge of the joist and an extension 15 of the plate 11 extends upwardly from the edge of the joist having at its upper end a pair of oppositely directed tangs 17, 18 which can be driven into the edges of adjoining decking planks as best seen in Fig 2 of WO 95/25856.

As described on page 8 of WO 95/25856 a first fastener is first fixed to a joist at a predetermined position and the side edge of a first decking plank is engaged in one of the tangs e.g. 17. A second parallel decking plank is then urged into engagement with the other tang 18 of the first fastener, the region 15 serving to space apart the two adjoining planks.

A second fastener is then described as being engaged with the side edge of the second plank before it is fixed to the side of the joist, by nailing through the aperture 12 of the second fastener.

It will be seen that whilst the first and second planks can be urged onto the tangs of the first fastener by knocking the opposite side edges of the decking planks using a mallet or club hammer, thereafter it is not clear how the tangs of the next fastening can be forced into the edges of the second decking plank, since the latter cannot be hammered onto the tangs, the fastening is not at that stage secured to the joist and any attempt to drive the tang into the plank edge by hammering the opposite tang will bend or blunt the latter and damage the hammer or mallet.

Since the plate section 11 and flanges 13 need to be in contact with the joist if the leading tang is to enter the second decking plank correctly it is not convenient to try and drive it into the plank by hammering on the right angled bend between 11 and 13, since the thickness of the metal forming the plate 11 and flange 13 is such as to be insufficient to provide an edge which can reliably be engaged by a hammer or mallet.

This apart, the need to nail the fastening of WO 95/25856 to the side of a joist presents a further problem. Typically the joists will be laid so as to be relatively close together and the spacing between one joist and the next will not normally allow a good swing with a hammer to drive a nail into the side of the joist.

Furthermore if the joists are only lightly secured in position on a suitable foundation, and tend to rely on being joined to the transversely extending planks to hold the assembly of joists together, any lateral hammering onto the joists will tend to displace them and potentially throw the arrangement out of true.

Lastly the section 15 of the fastening of WO 95/25856 means that the decking planks cannot be spaced closer than is permitted by the width of the region 15. This may not

always be desirable if for any particular reason it is desired to position the decking planks closer together either for appearance, or to reduce the risk of small items falling between them, or to allow for a whole number of planks to just occupy a given area without the need to reduce the width of at least one of the planks to allow it to be fitted.

Object of invention

It is an object of the present invention to provide an improved decking clip which includes the spacing advantage provided by the flange 13 of the fastening of WO 95/25856 so as to allow air to pass between the planks and the joists, and the advantage of securing two planks by means of a single clip, without the disadvantages of the earlier design of fastening, as outlined above.

Summary of the invention

According to one aspect of the present invention a decking clip for securing two adjoining parallel spaced apart decking planks to a transversely extending supporting joist therebelow, comprises:

- (1) a plate adapted to overlie a joist and securable thereto by at least one fixing device driven into the joist through the plate after the clip has been secured to a decking plank,
- (2) a first leg rigidly upstanding from the plate having at its upper end a lateral tang or spike which extends generally parallel to the plate, whereby in use the tang or spike can be driven into the side edge of a decking plank laid transversely over the joist,
- (3) a second similar leg also rigidly upstanding from the plate and also having a similar lateral tang or spike which also extends generally parallel to the plate, but with its sharp end pointing in the opposite sense to the sharp end of the tang or spike on the first leg, whereby in use and after being secured to a first plank, the clip can be

secured to a second plank by engaging the latter with the tang or spike on the second leg, and wherein

- (4) the upstanding legs are spaced apart across the plate to enable the tang or spike protruding from one of the legs to be driven into the edge of a plank by one or more hammer blows to the rear of that leg, without the hammer engaging the other leg or tang or spike protruding therefrom.

The plate may be formed with at least one aperture through which in use a nail or screw or other fixing device having an enlarged head can be driven into a joist therebelow, so as to sandwich the plate between the enlarged head of the fixing device and the joist.

Preferably there are two such apertures in the plate.

The aperture or apertures may be located in the plate at a position or positions which is/are clear of the regions thereof overhung by the tangs or spikes when viewed from above, thereby in use to allow a fixing device to be driven through the aperture into the joist by hammer blows from above without interfering with the upstanding legs and/or tangs or spikes.

Typically the plate is generally rectangular and the legs and tangs or spikes are symmetrically located relative to the width of the plate and the plate is adapted to be fitted to a joist with the width dimension of the plate transverse to the run of the joist to assist in locating the clip thereon.

Where the plate is generally rectilinear its dimensions are typically such that the width of the plate is substantially equal to the width of the joist to which it is to be attached.

To assist in locating the clip on the joist one or both of opposite parallel edges of the plate may include a downturned lip along some or all of its length, and the clip is positioned on the joist with the downturned lip(s) against the side(s) of the joist.

Where joists of different width are to be used, clips having differently dimensioned plates may be provided to suit the different joist sizes.

It is an advantage that in use the plate serves to space the underside of each plank in which one of its tangs or spikes is impaled, from the top of a joist across which the plank extends, by being at least in part sandwiched between the plank and the joist.

As each next decking plank is positioned parallel to the first and pushed or knocked laterally towards the first plank, so that the rearwardly protruding tangs or spikes of the clips penetrate the leading edge of the second plank, the second plank will ride up over the plate of each clip, so that it too will be spaced by the thickness of the plate from the joist.

The position of the aperture or apertures in the plate, may be selected so that the heads of the fixing device(s) used to secure the plate to the joist, will be hidden by at least one of the planks once the latter are in position.

Therefore if only one aperture is provided it is necessary to remember to locate each clip relative to the joist so that the unapertured region of the plate is driven below the first plank.

By providing two apertures, symmetrically arranged in the plate, the clip can be positioned either way round, so that either of the tangs or spikes is the leading point to be driven into the plank edge, and there will always be one aperture left exposed

The clip may be formed from a preformed metal blank by bending appropriate regions of the blank to form the upstanding legs.

The legs may in turn be bent over to form the tangs or spikes.

Preferably the positions of the bends forming the legs are selected so that the faces of the two legs are coplanar.

Typically the or each downturned lip is also formed by bending down an edge region of the plate.

Alternatively the clip may be formed from metal by casting or cold forming.

Advantageously each tang or spike may be formed with a shoulder so that each can only be driven into a plank by a distance dictated by the shoulder, whereby in use, by driving the tangs or spikes into the planks up to the shoulders, the clips will consistently space apart the adjoining planks. Each shoulder may comprise a step in an edge of the tang or spike between a region of increased width, thickness or diameter close to the leg from which the tang or spike protrudes, and a forward tapering region thereof, or each shoulder may be formed by a U-bend in a tang, or a collar in the case of a spike, or in the case of a tang by bending one or both edges of the tang at the wider end thereof adjacent the leg through an angle in the range 20° to 90°, to form a channel section in that region of the tang, which will not readily penetrate the edge of the plank.

In one embodiment of the invention the two upstanding legs are displaced so as not to be coplanar but occupy two spaced apart planes, and the displacement of the two legs determines the minimum gap which will be left between the adjoining edges of two planks, into which the tangs or spikes of the clip are driven.

According to another aspect of the invention there is provided a method of securing a plank crosswise to a plurality of spaced apart joists in which a clip constructed in accordance with the invention is positioned on each joist adjacent the plank, the tangs or spikes of the clips are driven into the trailing edge of the plank, at least some of the clips are secured to the joist by driving a fixing device therethrough into the joist therebelow, a second plank is then positioned parallel to the first, in contact with the line of rearwardly protruding tangs or spikes of the line of clips already secured to the trailing edge of the first plank, and the said second plank is impaled on the tangs or spikes by hammering it from the rear.

Preferably the plank is hammered in line with each of the clips in turn, beginning at one end of the plank and working along the length to the opposite end, thereby successively driving each of the protruding tangs or spikes into the leading edge of the plank.

Where each clip includes at least one aperture in the plate thereof, preferably each clip is positioned on the joist so that the aperture therein remains exposed after a tang or spike of the clip has been driven in a forward direction into the trailing edge of the first plank, to enable a fixing device to be hammered through the exposed aperture into the joist, before the next plank is secured to the rearwardly protruding tang or spike thereof.

Where each clip includes two apertures in the plate, whereby the clip can be positioned either way round, and the positions of the two apertures are selected so that after one of its tangs or spikes has been driven into the trailing edge of the first plank there will always be one aperture left exposed to the rear of the leg bearing the said one tang or spike, through which a fastening device can be driven into the joist.

According to a further aspect of the invention there is provided a tool for use with a clip embodying the invention, to assist in driving a tang or spike thereof in a forward direction into the edge of a plank, comprising:

- a) an elongate body section by which the tool can be held in use,
- b) a leading end of the body section adapted to engage the rear of the upstanding leg of a clip carrying the tang or spike which is to be driven into the plank, and
- c) a trailing end of the body section which is squared off to provide a face which can be hit reliably with a hammer,

whereby in use the tool transmits the force of a hammer blow from the trailing end to the leading end thereof thereby to drive the tang or spike of the leg engaged by the said

leading end into the edge of a plank so that with successive blows the tang or spike penetrates and becomes impaled in the plank.

The leading end of the tool may be bifurcated so as to provide two ends for engaging the rear of both upstanding legs of a clip, and at least one of the ends is dimensioned so as to fit between the plate section of the clip and the tangs or spikes protruding from the legs.

According to a still further aspect of the invention spacers may be provided and fitted between the first and last planks and the joists, the thickness of the spacers being substantially the same as the thickness of the plate portions of the clips.

Each spacer may simply comprise an apertured plate which is adapted to be secured between a plank and a joist by a nail or like fixing device driven through the aperture either before a plank is positioned thereover, or by a nail or like fixing device used to secure the plank to the joist.

The invention will now be described by way of example with reference to the accompanying drawings in which:-

Fig 1 is a perspective view of decking showing how planks are laid over supporting joists;

Fig 2 is a perspective view of a decking clip embodying the invention;

Fig 3 is a perspective view showing a clip such as shown in Fig 2 securing a plank to a joist;

Fig 4 is a perspective view of part of a plank secured to three joists using slips embodying the invention and shows how a tool can be used to drive the clips into the plank;

Fig 5 is a plan view of a part of decking planking showing the positions of the clips and a preferred method of driving a plank onto the tangs of a line of clips, and

Fig 6 is a plan view of a blank from which the clip of Fig 2 can be formed by bending.

In Fig 1 an array of joists 10, 12 are secured by truss shoes 14 to transverse end closures 16, 18, to form a rectilinear support for decking planks 20, 22 etc. laid transversely over the joists. Although shown apparently in edge abutting relationship, the planks will more usually be spaced apart by 5-10mm.

Whereas the ends of the planks overlying the end joists 24, 26 will typically be nailed or secured to the joists 24, 26 the joints at the intermediate intersections of the planks are made using clips embodying the invention, one of which is shown in Fig 2 and will be described in more detail with reference to the later Figures of the drawings.

Around the decking platform in Fig 1 is a guard rail assembly generally designated 28 which can extend completely around the deck except for an opening adjacent steps 30 allowing access to and from the deck, with a handrail shown at 32. The assembly can be supported above ground using any suitable foundation supports such as shown at 34 and 36.

As shown in Fig 2 a clip embodying the invention comprises a flat base-plate 38 having two circular holes 40, 42 to allow a nail or screw to pass therethrough to secure it to a joist, and two aligned legs 44, 46 upstanding perpendicularly from the base-plate 38 and terminating at their upper ends in two oppositely directed triangular tangs 48, 50 respectively.

Fig 3 shows how the clip can be secured by a nail 52 to a joist 54 after the tang 56 has been driven into the near edge 58 of a plank 60 laid over the joist, so that the front of the leg 62 and the rear of the leg 64 are in contact with the edge 58 of the plank. Preferably galvanised nails are employed to reduce corrosion.

As shown in Fig 3 the other leg 66 is now ready to receive the far edge of a second plank (not shown) if the latter is laid over the joist parallel to plank 60, on top of the base-plate 68, and is then forced onto the sharp end of tang 66 as by hammering the near side edge of the plank in a direction towards the clip.

The method of securing the clips to the planks and joists is better shown in Figs 4 and 5. The method comprises the following steps:

1. Lay the first deck board 70 in line with the ends of the joists 72, 74 etc. Locate deck spacer between the joist and deck board 70 then drill and screw down. Repeat this along the whole length of deck board 70.
2. Locate leading edge of base-plate 68 of decking clip 78 under front edge of deck board 70.
3. Take the flat application tool 80 and place against both vertical faces of legs 62, 64 of a decking clip
4. Stand on the front edge of deck board 70 to hold board firmly onto the decking clips. With a hammer 82 strike the end of the application tool 80 until the tang 56 of the decking clip is firmly secured into the edge of the deck board 70.
5. Hammer a nail 84 into exposed hole 86 of decking clip. Repeat steps 2, 3, 4 and 5 along the whole length of deck board 70.
6. Place the next deck board (not shown) to be fixed in line with the fixed board 70. Stand on the edge of the board 70 above the decking clip, place an offcut of timber on back edge to prevent any damage to deck board, and then strike it with a hammer (See Fig 5) until the board is fastened onto the protruding tangs of the clips along the edge of board 70. Repeat this along the new board until it is all secure.

7. Repeat steps 2, 3, 4, 5 and 6 across the joists. Follow the same procedure for the final board but then use spacers such as 76, as in step 1, and drill and screw last deck board down.

Fig 6 shows a metal blank formed by stamping from 1.5mm pre-galavanised mild steel from which the clip of Fig 2 can be formed by bending along lines A and B to form the two legs and along lines C and D to form the tangs. Holes are stamped or drilled at E and F each 45mm diameter.

As shown the included angle at the apex of each triangular tang is 50° and the other preferred dimensions in mm are given as appropriate.

Advantages of the clip and decking system provided by using it are:

- A. Decking boards are held off the joist surface by the clip, allowing full air circulation, reducing the likelihood of rotting.
- B. The clip also acts as a spacer between the boards, which provides improved drainage off the deck surface, improving safety, and reducing maintenance requirements.
- C. No unsightly nail, screw or hammer dents means an unbroken deck surface, eliminating countersinking, water puddles or rust stains.

Claims

1. A decking clip for securing two adjoining parallel spaced apart decking planks to a transversely extending supporting joist therebelow, comprising:
 - (1) a plate adapted to overlie a joist and securable thereto by at least one fixing device driven into the joist through the plate after the clip has been secured to a decking plank,
 - (2) a first leg rigidly upstanding from the plate having at its upper end a lateral tang or spike which extends generally parallel to the plate, whereby in use the tang or spike can be driven into the side edge of a decking plank laid transversely over the joist,
 - (3) a second similar leg also rigidly upstanding from the plate and also having a similar lateral tang or spike which also extends generally parallel to the plate, but with its sharp end pointing in the opposite sense to the sharp end of the tang or spike on the first leg, whereby in use and after being secured to a first plank, the clip can be secured to a second plank by engaging the latter with the tang or spike on the second leg, and wherein
 - (4) the upstanding legs are spaced apart across the plate to enable the tang or spike protruding from one of the legs to be driven into the edge of a plank by one or more hammer blows to the rear of that leg, without the hammer engaging the other leg or tang or spike protruding therefrom.
2. A decking clip as claimed in claim 1 wherein the plate is formed with at least one aperture through which in use a nail or screw or other fixing device having an enlarged

3. A decking clip as claimed in claim 2 wherein there are two such apertures in the plate.
4. A decking clip as claimed in any of claims 1 to 3 wherein the aperture or apertures is/are located in the plate at a position or positions which is/are clear of the regions thereof overhung by the tangs or spikes when viewed from above, thereby in use to allow a fixing device to be driven through the aperture into the joist by hammer blows from above without interfering with the upstanding legs and/or tangs or spikes.
5. A decking clip as claimed in any of claims 1 to 4 in which the plate is generally rectangular and the legs and tangs or spikes are symmetrically located relative to the width of the plate and the plate is adapted to be fitted to a joist with the width dimension of the plate transverse to the run of the joist to assist in locating the clip thereon.
6. A decking clip as claimed in any of claims 1 to 5 wherein the plate is generally rectilinear and is dimensioned so that the width of the plate is substantially equal to the width of the joist to which it is to be attached.
7. A decking clip as claimed in claim 6 wherein one or both of opposite parallel edges of the plate include(s) a downturned lip along some or all of its length, and the clip is positioned on the joist with the downturned lip(s) against the side(s) of the joist, to assist in locating the clip on the joist.
8. A decking clip as claimed in any of claims 1 to 7 wherein the plate serves in use to space the underside of each plank in which one of its tangs or spikes is impaled, from the top of a joist across which the plank extends, by being at least in part sandwiched between the plank and the joist.
9. A decking clip as claimed in any of claims 1 to 8 wherein the position of the aperture or apertures in the plate, is/are selected so that the heads of the fixing device(s) used to

secure the plate to the joist, will be hidden by at least one of the planks once the latter are in position.

10. A decking clip as claimed in any of claims 1 to 9 formed from a preformed metal blank by bending appropriate regions of the blank to form the upstanding legs.
11. A decking clip as claimed in claim 10 wherein the legs are in turn bent over to form the tangs or spikes.
12. A decking clip as claimed in claim 10 or 11 wherein the positions of the bends forming the legs are selected so that the faces of the two legs are coplanar.
13. A decking clip as claimed in any of claims 7 to 12 in which the or each downturned lip is formed by bending down one edge region of the plate.
14. A decking clip as claimed in any of claims 1 to 9 formed from metal by casting or cold forming.
15. A decking clip as claimed in any of claims 1 to 14 in which each tang or spike is formed with a shoulder so that each can only be driven into a plank by a distance dictated by the shoulder, whereby in use, by driving the tangs or spikes into the planks up to the shoulders, the clips will consistently space apart the adjoining planks.
16. A decking clip as claimed in claim 15 wherein the shoulder comprises a step in an edge of the tang or spike between a region of increased width, thickness or diameter close to the leg from which the tang or spike protrudes, and a forward tapering region thereof.
17. A decking clip as claimed in claim 15 wherein the shoulder is formed by a U-bend in a tang, or a collar in the case of a spike, or in the case of a tang by bending one or both edges of the tang at the wider end thereof adjacent the leg through an angle in the range

20° to 90°, to form a channel section in that region of the tang, which will not readily penetrate the edge of the plank.

18. A decking clip as claimed in any of claims 1 to 17 in which the two upstanding legs are displaced so as not to be coplanar but occupy two spaced apart planes, and the displacement of the two legs determines the minimum gap which will be left between the adjoining edges of two planks, into which the tangs or spikes of the clip are driven.
19. A method of securing a plank crosswise to a plurality of spaced apart joists in which a clip as claimed in any of claims 1 to 18 is positioned on each joist adjacent the plank, the tangs or spikes of the clips are driven into the trailing edge of the plank, at least some of the clips are secured to the joist by driving a fixing device therethrough into the joist therebelow, a second plank is then positioned parallel to the first, in contact with the line of rearwardly protruding tangs or spikes of the line of clips already secured to the trailing edge of the first plank, and the said second plank is impaled on the tangs or spikes by hammering it from the rear.
20. A method as claimed in claim 19 wherein the plank is hammered in line with each of the clips in turn, beginning at one end of the plank and working along the length to the opposite end, thereby successively driving each of the protruding tangs or spikes into the leading edge of the plank.
21. A method as claimed in claim 19 or 20 in which each clip includes at least one aperture in the plate thereof, and each clip is positioned on the joist so that the aperture therein remains exposed after a tang or spike of the clip has been driven in a forward direction into the trailing edge of the first plank, to enable a fixing device to be hammered through the exposed aperture into the joist, before the next plank is secured to the rearwardly protruding tang or spike thereof.
22. A method as claimed in claim 19 or 20 in which each clip includes two apertures in the plate, which are located relative to the legs such that in use the clip can be positioned

either way round, so that after one of its tangs or spikes has been driven into the trailing edge of the first plank there will always be one aperture left exposed to the rear of the leg bearing the said one tang or spike, through which a fastening device can be driven into the joist.

23. A tool for use with a clip as claimed in any of claims 1 to 18, to assist in driving a tang or spike thereof in a forward direction into the edge of a plank, comprising:

- a) an elongate body section by which the tool can be held in use,
- b) a leading end of the body section adapted to engage the rear of the upstanding leg of a clip carrying the tang or spike which is to be driven into the plank, and
- c) a trailing end of the body section which is squared off to provide a face which can be hit reliably with a hammer,

whereby in use the tool transmits the force of a hammer blow from the trailing end to the leading end thereof thereby to drive the tang or spike of the leg engaged by the said leading end into the edge of a plank so that with successive blows the tang or spike penetrates and becomes impaled in the plank.

24. A tool as claimed in claim 23 wherein the leading end is bifurcated so as to provide two ends for engaging the rear of both upstanding legs of a clip, and at least one of the ends is dimensioned so as to fit between the plate section of the clip and the tangs or spikes protruding from the legs.

25. A method as claimed in any of claims 19 to 24 wherein spacers are provided and fitted between the first and last planks and the joists, the thickness of the spacers being substantially the same as the thickness of the plate portions of the clips.

26. A spacer for use in the method of claim 25 comprising an apertured plate which is adapted to be secured between a plank and a joist by a nail or like fixing device driven through the aperture either before a plank is positioned thereover, or by a nail or like fixing device used to secure the plank to the joist.
27. A decking clip constructed and arranged substantially as herein described with reference to the accompanying drawings.
28. A tool to assist in driving a clip as claimed in claim 1 into a plank, constructed and arranged substantially as herein described with reference to the accompanying drawings.



Application No: GB 0226339.0
Claims searched: 1 - 22 & 25

Examiner: Heather Scott
Date of search: 25 February 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1 - 4, 8, 10 - 12 & 18 - 22	GB 2371609 A	(SAMMONS) see figure 4 in particular
X	1 - 4, 8, 10 - 12, 15, 16 & 18 - 22	US 2303103 A	(ADAMS) see page 2, column 2 lines 23 - 64 and figure 5

Categories:

<input checked="" type="checkbox"/> X Document indicating lack of novelty or inventive step	<input type="checkbox"/> A Document indicating technological background and/or state of the art.
<input type="checkbox"/> Y Document indicating lack of inventive step if combined with one or more other documents of same category.	<input type="checkbox"/> P Document published on or after the declared priority date but before the filing date of this invention.
<input type="checkbox"/> & Member of the same patent family	<input type="checkbox"/> E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^V:

F2M

Worldwide search of patent documents classified in the following areas of the IPC⁷:

E04B; F16B

The following online and other databases have been used in the preparation of this search report:

EPODOC, WPI, JAPIO

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